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(54) **ULTRASENSITIVE AND COMPACT DEVICE FOR NONINVASIVE ACQUISITION OF LOW STRENGTH BIO SIGNALS AND METHOD OF USING SAME**

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(58) **Field of Classification Search**

CPC A61B 5/0476; A61B 5/04

See application file for complete search history.

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(57) **ABSTRACT**

A method of detecting changes in biologically sourced electrical signals is disclosed. Biologically sourced electrical signals are coupled to a meta-stable and hair-trigger wise perturbable system. The system operates in a first oscillatory mode when the received signals have a strength below a first predetermined level and operates in a distinguishable second oscillatory mode when the received signals have strengths above the first predetermined level but below a second predetermined level. The strengths of the received and thusly distinguishable signals may be in a range below 10 picoAmperes. The biologically sourced electrical signals may be driven by intracranial nerve firings.

9 Claims, 14 Drawing Sheets